

## **P-4.9 Explain the effects of magnetic forces on the production of electrical currents and on current carrying wires and moving charges.**

**Revised Taxonomy Levels 2.7 B Explain conceptual knowledge**

### **Key concepts**

Electromagnetic induction

In physical science students “Explain the relationship of magnetism to the movement of electric charges in electromagnets, simple motors, and generators.” (PS-6.11)

### **It is essential for students to**

- ❖ Analyze the relationship between electric currents and magnetic fields.
  - Understand how electric currents produce magnetic fields.
  - Understand how magnetic fields affect wires with currents or streams of electrons.
- ❖ Understand electromagnetic induction.

### **Assessment**

The verb explain means that the major focus of assessment should be for students to “construct a cause and effect model”. In this case, assessments will ensure that students can model how magnetic force affects the flow of charge in conductors. Because the indicator is written as conceptual knowledge, assessments should require that students understand the “interrelationships among the basic elements within a larger structure that enable them to function together.” In this case, assessments must show that students can construct a cause and effect statement relating how the magnitude and direction of the magnetic force affect the direction and flow of current.